PATENT APPLICATION

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q55806

Yoichi OKAMOTO, et al.

Appln. No.: 09/398,006

Group Art Unit: 1733

Confirmation No.: 9551

Examiner: Justin R. FISCHER

Filed: September 16, 1999

For: PNEUMATIC RADIAL TIRES

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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I. REAL PARTY IN INTEREST

Based on information supplied by Appellant and to the best knowledge of the Appellant's legal representative, the real party in interest is the assignee, BRIDGESTONE CORPORATION, by virtue of an Assignment recorded on September 16, 1999 at Reel 010252, Frame 0477.

II. RELATED APPEALS AND INTERFERENCES

Upon information and belief, there are no other prior or pending appeals, interferences, or judicial proceedings known to Appellant, Appellant's representative or the assignee that may be related to, be directly affected by, or have a bearing on the Board of Patent Appeal's and Interference's (Board) decision on this appeal.

III. STATUS OF CLAIMS

The application was filed with claims 1-23. During prosecution, claims 2, 4, and 8-23 were canceled and claims 24-26 were added.

As stated in the Advisory Action dated December 28, 2005, for the purposes of appeal, the status of the claims is as follows:

Claims rejected: 1, 3, 5-7, and 24-26. Appellant notes, however, that claim 26 was added in the Amendment of November 4, 2004 and the Advisory Action further indicates that this proposed Amendment will not be entered. Notwithstanding this ambiguity, Appellant will assume that claim 26 is entered and rejected as noted below.[1] Specifically,

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[1] The Examiner states in the Advisory Action at page 3 that, in the Examiner's opinion, claim 26 is "a substantial duplicate of claim 1."

1. Claims 1, 3, 5, and 24-26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth (GB 1,483,053) in view of Kohno (U.S. Patent No. 5,968,295) and optionally in view of Gaudin (U.S. Patent No. 5,591,284).
2. Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth, Kohno and Gaudin as applied above and further in view of Okamoto (U.S. Patent No. 5,779,828).
3. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth, Kohno and Gaudin as applied above and further in view of Imamura (U.S. Patent No. 3,913,652).

IV. STATUS OF AMENDMENTS

Based on the indication in the Advisory Action dated December 28, 2004, the Examiner appears to have entered the Amendment under 37 C.F.R. § 1.116 filed November 4, 2004, which only added claim 26. Therefore, all amendments to the claims that were made during the prosecution of the present application, have been entered and new claim 26 has been added.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed subject matter is a pneumatic radial tire having three rubberized cord layers for weight reduction and demonstrating improved cut resistance, durability, separation resistance, and cornering resistance, among other improved performance features. *See* Specification at page 1, first paragraph.

With reference to the exemplary embodiment illustrated in Figs. 5 and 8, a pneumatic tire covered by the claims on appeal comprises three rubberized cord layers 35, 36, 37. *See* Specification at page 16, first full paragraph. The cords 35a of the innermost cord layer 35 and the cords 36a of the middle cord layer 26 are crossed with each other with respect the equatorial plane E of the tire. *Id.* In particular, the cords 35a of the innermost layer and those 36a of the middle layer are arranged at an inclination angle (α, β) of 10 to 25 degrees. *Id.* With this arrangement, the circumferential tension Fx (*See* Fig. 8) in the belt 34, made up of cord layers 35, 36, and 37, is mainly borne by the cords 35a and 36a of the inner and middle cord layers, respectively. *See* specification at page 17, last line to page 18, first paragraph. As explained further below, this reduces the tension borne by the outermost cord layer 37. *Id.* On the other hand, the cords 37a of the outermost cord layer 37 are arranged at an inclination (γ) of 45 to 115 degrees (or preferably 45 to 90 degrees) as measured in the same direction as the inclination angle (β)of the cord 36a. *Id.*

The improved performance of the pneumatic tire is described as follows:

> Thus, when the tread portion 31 of the tire 30 during the running under loading rides on a foreign matter such as a broken stone, small rock or the like having a sharp corner edge, even if the corner edge arrives at a belt 34 through the tread rubber 33, the cords 37a of the outermost cord layer 37 are hardly cut and the durability of the tire 30 is improved based on such cut resistance.

Specification at page 18, first full paragraph. The Specification continues with explanations of further important advantages attributable to the above tire structure

> the degree if decreasing the inclination angle in the cord 37a [when the tire is inflated] is very small as compared with those of the

> cords 35a, 36a and hence the outermost cord layer 37 indicates a tendency hardly causing the contraction in the widthwise direction.
>
> This means that the outermost cord layer 37 acts to control the contraction of the cross cord layer 38 in the widthwise direction because the cords 37a of the outermost cord layer 37 acts as a prop to the cross cord layer 38. As a result cross cord layer 38 having the controlled widthwise contraction increases the circumferential rigidity of the tread portion 31, and hence the cornering power [CP] can be improved even in the tire 30 having the belt 34 of the three-layer structure to develop the cornering performance equal to or more than that of the conventional tire having a belt of four-layer structure. Furthermore, the increase of the circumferential rigidity in the cross cord layer 38 largely contributes to control the growth of the tire size in the inflation of the tire under the inner pressure.

Specification at page 18, last paragraph to page 19, first paragraph. Appellant's specification disclosed yet further advantages attributed to the tire configuration in accordance with the pneumatic tire arrangement described above:

> Moreover, the inclination angles α, β of the cords 35a and 36a . . . are approximately equal to each other with respect to the equatorial plane E . . . [such that] tension is equally [borne] by the cords 35a and 36a. The reason why the inclination angles α, β of the cords 35a and 36a are restricted to a range of 10-25 [degrees] is due to the fact that when each of the inclination angles α, β is less than 10 [degrees], interlaminar shearing strain produced between the innermost cord layer 35 and an end portion of the middle cord layer 36 become too large and the separation failure is apt to be caused at such an end portion, while when the inclination angle α, β exceeds 25 [degrees], the effect of controlling the widthwise contraction of the outermost cord layer 37 can not sufficiently be developed due to the tension Fx acting to the belt 34 in the tire 30 inflated under the inner pressure and hence the circumferential rigidity of the cross cord layer 38 considerably lowers to bring about the degradation of CP property and the increase of the tire size growth.

Specification at page 19, first full paragraph.

In addition to having the cords 37a of the outermost cord layer 37 arranged at an inclination (γ) of 45 to 115 degrees (or 45 to 90 degrees) as measured in the same direction as the inclination angle (β)of the cord 36a, the outermost cords 37a are covered with a coating of rubber having a compression modulus not less than 200 kgf/cm^2. *Id.* This latter feature improves the resistance to buckling fatigue in the cord 37a of the outermost cord layer 37. The method used for calculating the compression modulus is disclosed in the specification at page 13, second full paragraph in connection with Fig. 3.

In addition to the foregoing structural arrangement, the claims on appeal require the width of the outermost cord layer 37 to be narrower than the width of the inner cord layer 35, and, in one embodiment covered by claim 1, as wide or wider than the width of the middle cord layer 36. As explained in Appellant's specification beginning in the last paragraph at page 22 and with reference to Fig. 8, having the width of the outermost cord layer 37 to be as wide or wider than the width of the middle cord layer 36 causes a part of the shearing rigidity of the cross cord layer 38 (*i.e.*, 35 and 36) to be taken over between the end portion of the outermost layer cord layer 37 at the end zone of the middle cord layer 36, thereby decreasing the interlaminar shearing strain in the cross cord layer 38 at region. *See* Specification at page 22, last paragraph. The preferred width of the outermost cord layer is 1.0 to 1.2 times the width of the middle cord layer. *See* Specification at page 23, first paragraph. Exceeding a width of 1.2 causes the tensile strain at the end of the outermost cord layer to become large, which may cause separation failure. *Id.*

In another embodiment, as recited in claim 3, the rubber gauge between the cord at an end portion of the middle cord layer and the cord of the outermost cord layer adjacent thereto is not less than 0.15 time a rubber gauge between the cord at the end portion of the middle cord layer and the cord of the innermost cord layer adjacent thereto. As described at page 23 of the Specification, this feature further improves the tires resistance to separation failure. In order to meet the foregoing requirement, as shown in Figs. 9 and 10 and described at pages 23 to 24, a sheet-shaped end cover 49 may be used. In particular, as described on these pages and recited in claim 6, in a preferred embodiment, at least one surface of inner and outer surfaces of the cord layer end portion provided with the end cover rubber is a wavy surface forming a mountain part at a cord existing position and a valley part at a position between adjoining cords, and a difference of height between the mountain part and the valley part is within a range of 0.05-0.25. This restricted height difference "largely contributes to control the occurrence of separation between the innermost cord layer 35 and the end portion of the middle cord layer 36 constituting the cross cord layer 38." Specification at page 24, end of first paragraph.

In yet a further embodiment covered by claim 7, at least one of the innermost cord layer and the middle cord layer is provided with a rubber layer joined to a widthwise end face of the cord layer over a full periphery of the cord layer, and the rubber layer has a width of 0.05-5.00 mm. This feature is described with reference to Fig. 11 at pages 25, second paragraph. The rubber layer 54 in the figure can prevent the projection of ends of the cords 35a and 36a into the tread rubber 32, which further improves separation resistance.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are being appealed:

1. Claims 1, 3, 5, and 24-26 are rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth (GB 1,483,053) in view of Kohno (U.S. Patent No. 5,968,295) and optionally in view of Gaudin (U.S. Patent No. 5,591,284).
2. Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth, Kohno and Gaudin as applied above and further in view of Okamoto (U.S. Patent No. 5,779,828).
3. Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Farnsworth, Kohno and Gaudin as applied above and further in view of Imamura (U.S. Patent No. 3,913,652).

It is respectfully submitted that all the pending claims are patentable for at least the reasons that follow.

VII. ARGUMENT

1. Claims 1, 3, 5, And 24-26 In View Of Farnsworth, Kohno And Gaudin.

a. Claims 1, 3 and 26

Appellant respectfully submits that the Examiner's grounds for rejection are based on an unreasonably broad assertion of what the prior primary reference, Farnsworth, and secondary references, Kohno and Gaudin, actually would have taught or suggested to the skilled artisan.

To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a particular reference or to combine reference teachings. *See* Manual Of Patent Examining Procedure ("MPEP") at Section 2143.

The USPTO is held to a *rigorous* standard when trying to show that an invention would have been obvious in view of the combination of two or more references or modification of a single reference. *See, In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), *citing, e.g., In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.").

The case law emphasizes that the "need for specificity pervades this authority." *In re Lee* at 1433 (emphasis added) (*citing In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed").

The Examiner's grounds of rejection do not meet the Federal Circuit's *rigorous* standard for demonstrating that the claimed subject matter would have been obvious in view of the applied art.

Specifically, the Examiner acknowledges that Farnsworth does not explicitly disclose the combination of three rubberized cord layers having the particular cord geometry and widths recited in the claims. Nevertheless, the Examiner takes the following *conclusory* position:

> As to the axial widths of the respective plies, while Farnsworth fails to expressly require the outermost ply have an intermediate width (in relation to inner and middle ply), a fair reading of Farnsworth suggests that a wide range of belt assemblies having varying widths is within the scope of Farnsworth- in particular, the reference places no criticality on which belt ply is the widest or the narrowest, as evidenced by Figures 1-3C. As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the outer ply narrower than the innermost ply and wider than the middle ply, there being no conclusive showing of unexpected results to establish a criticality for this relationship.

Office Action of April 22, 2004 at page 3. The Examiner is clearly relying on improper hindsight to take away more from the disclosure of Farnsworth than what it fairly teaches or suggests to one skilled in the art.

Figure 3a of Farnsworth discloses a ply breaker assembly. The uppermost ply has a low bias (*i.e.* 10-25 degrees) and a width that is less than that of the middle ply layer. Figures 3b and 3c each discloses a ply breaker assembly with the uppermost ply having a high bias (i.e. 40-70 degrees) and a width that is greater than that of the middle ply layer, but also greater than that of the lowest ply layer. Therefore, none of the embodiments of Farnsworth disclose the combination of features that make up the pneumatic radial tire.

Evidently acknowledging this deficiency, the Examiner initially relied on statements made in the Office Action of August 12, 2003, in which the Examiner took the position that Farnsworth "places no criticality on the axial extent of the outer, high angled layer in relation to

the inner and middle layers, only stating that the maximum axial width of the belt assembly (as a whole) is in the range of 90 to 110% of the tread width." Office Action of August 12, 2003 at page 6. From there, the Examiner concluded, "[t]he specific selection of an embodiment in which the high angled layer is wider than the middle layer and narrower than the innermost layer would have been within the purview of one of ordinary skill in the art . . ., particularly since it is well known to stagger the ends of belt plies so stresses do not build up at the ply ends." *Id.* Appellant respectfully submits that this is a classic case of improper hindsight reconstruction. The Examiner is taking away from Farnsworth teachings or suggestions that clearly are not rooted in the disclosure itself, but are based on Appellant's disclosure as a roadmap. Indeed, the fact that Farnsworth describes certain so-called "staggered" configurations, but none of which correspond to Appellant's recited configuration *would likely lead the skilled artisan away from Appellant's invention.*

In an effort to further support the rejection, the Examiner cites to Gaudin as allegedly providing additional evidence that reconfiguring the plies to achieve Appellant's claimed structure would have been obvious:

> Gaudin is optionally applied to evidence that it is known in the tire industry to stagger the ends of belt plies in order to avoid the buildup of stresses (Column 1, Lines 35-45) and furthermore, it is known in the tire industry that any of a wide number of belt arrangements having varying axial widths provide a suitable belt construction (Column 2, Lines 24-32 and Figures 6-11). It is emphasized that the belt construction of Gaudin depicted in Figures 6-11 is extremely similar to that of Farnsworth in that three steel plies are included.

Office Action dated April 22, 2004 at page 3. Appellant disagrees.

Gaudin actually detracts, rather than supports, the Examiner's grounds of rejection. It is true that Gaudin discloses three and four breaker strip arrangements with various widths, including the three ply arrangement illustrated in Fig. 6 of the reference with the outermost strip wider than the middle strip and narrower than the innermost strip. *However*, Gaudin identifies each of these arrangements with *particular* breaker strip constructions, such that the arrangement in Fig. 6, for example, is not disclosed as being generally applicable to all breaker strip configurations and one skilled in the art would not have taken away such a teaching or even a suggestion in this direction.

To the contrary, Gaudin identifies the arrangement in Fig. 6 with the structure of Fig. 2, in which:

> All four breaker strips 1-4 are steel cord fabric of cut steel cords laid parallel to each other and embedded in rubber. The cords of the main plies 1-3 are inclined with respect to the circumferential equator CE of the tire at angles of $\alpha 1$, $\alpha 2$ and $\alpha 3$ respectively. <u>These angles have values of 18°, 67° and 18° respectively.</u> <u>Breaker plies 1 and 2 have their cords inclined in the same direction with respect to the circumferential equator CE whereas the cords of breaker ply 3 are oppositely inclined to the circumferential equator CE.</u> This arrangement of the inclinations $\alpha 1$, $\alpha 2$ and $\alpha 3$ of the three main breaker plies 1-3 in relation to the tire circumferential equator CE and the radially disposed carcass ply cords 7 is shown in FIG. 2. The cords of the fourth ply 4 are inclined also at 18° in the same direction as the third ply 3. (Gaudin at column 3, lines 1-14) (emphasis added).
>
> While the present invention has been illustrated by the tire shown in FIG. 1 and as described above, other arrangements of the breaker strip assembly 5 are possible within the scope of the invention, <u>provided that the first and third plies 1 and 3 have opposite inclination angles in the range of 5° to 40° and the second</u>

> ply 2 has an inclination the range of 40°-85°. (Gaudin at column 3, lines 24-30) (emphasis added).
>
> Alternative arrangements of ply cords directions and breaker ply widths are shown in FIGS. 3-5 and FIGS. 6-11, respectively. These arrangements also provide improved edging rubber looseness characteristics for the heavy duty tire. (Gaudin at column 3, lines 31-35).

Therefore, Gaudin does not support the grounds of rejection, but, to the contrary, would *teach away* from Appellant's invention, since it specifically identifies the breaker strip arrangement of Fig. 6 with the cord construction of Fig. 2. Alternatively, at a minimum the first and third plies 1 and 3 have opposite inclination angles in the range of 5° to 40° and the second ply 2 has an inclination in the range of 40°-85°. *Therefore, Gaudin makes it clear that, in the art of pneumatic tire design, the cooperation between the various parts of a pneumatic tire is very critical such that one cannot selectively lift individual features of a disclosed tire construction while ignoring other disclosed features.* The Manual Of Patent Examining Procedure ("MPEP") mandates that "the references must be considered as a whole," and therefore requires the Examiner to consider and confront those passages in the applied art that lead away from the claimed invention. MPEP §§ 2141, 2141.02. Accordingly, the rigorous standard required by the case law is even further elevated by the passages in Gaudin that lead the skilled artisan away from the claimed invention.

In the Office Action dated August 24, 2004, the Examiner reiterated *verbatim* the grounds of rejection set forth in the previous Office Action of April 22, 2004, and added:

> "As to the limitation requiring the outermost layer be between 1.0 and 1.2 times the axial width of the middle cord layer, both Figures 3b and

> 3c of Farnsworth depict a construction in which the high angled layer covers the middle cover and contains an axial width that is slightly staggered outward of the end of the middle cord layer. One of ordinary skill in the art at the time of the invention would have recognized that the amount of staggering is on the order of a couple of millimeters and well within the broad range of values that allows up to a 20% staggering. It is further noted that Farnsworth states that the tread width is on the order of 185 to 200 millimeters. Thus, a middle cord layer might have an axial width of approximately 150 millimeters- this allows for an outermost layer to have an axial width of up to 180 millimeters. It is evident that the range of the claimed invention is broad and defines embodiments that are consistent with a plurality of tire designs."

Office Action dated August 24, 2004 at pages 5-6.

Furthermore, the Examiner responded to Appellant's previous arguments set forth in the Amendment of July 22, 2004, as follows:

> Applicant's arguments filed July 22, 2004 have been fully considered but they are not persuasive. Applicant contends that Gaudin teaches away from the claimed invention in that it specifically identifies the breaker strip arrangement of Figure 6 with the cord construction of Figure 2. Applicant further argues that the arrangement of Figure 6, for example, is not generally applicable to all breaker strip configurations. Lastly, applicant contends that the compression modulus (of the present invention) is carried out by the measuring method shown in Figure 7.
>
> It is agreed that Gaudin describes a specific belt structure in which a high angled cord layer is disposed between an inner and outer low angle cord layer. However, in describing the axial widths of the respective belt layers, the teachings of Gaudin do not suggest that the plurality of belt assemblies depicted in Figures 6-11 are only specific to the disclosed construction. Applicant is pointed to Column 1, Lines 35-40 in which Gaudin states, "Furthermore in belt designs, it is desirable to stagger the ply endings in the edge regions of the belt by employing plies of different widths. This gives a progressive reduction in stiffness and minimized stress concentration at the belt edge." This description suggests that a staggered belt assembly is beneficial for belt designs in general- it is by no means specific only to the belt design of Gaudin. It is further noted that Farnsworth is consistent with these teachings, as depicted in Figures 3a-3c. While Farnsworth fails to depict all possible staggered assemblies, a

> fair reading of Farnsworth suggests that a plurality of belt constructions are within the scope of Farnsworth. Given the three belt construction of Farnsworth, there are only 6 possible designs (varying axial widths), three of which are expressly depicted in the above noted figures. It is emphasized that Farnsworth fails to place a criticality on the specific staggering assembly but rather stresses the importance of a high angled, metal cord layer radially outside a pair of low angle, metal cord layers- this is the same belt construction of the claimed invention. Regarding the purported unexpected results, the original disclosure only states that the benefits of cut resistance and separation resistance result from the outermost cord layer being wider than the middle cord layer- the original disclosure fails to associate any criticality to the relationship between the outermost cord layer and the innermost cord layer. In this regard, Farnsworth depicts multiple embodiments (Figures 3B and 3C) in which the outermost, high angled cord layer is wider than the middle cord layer.
>
> Regarding the compression modulus, it is unclear if applicant is suggesting that the claimed property is not present in the coating rubber of Kohno- the arguments only state that a different method is performed in the inventive tire design as compared to usual measuring methods. While a different method might be used, Kohno does suggest the use of a high modulus material in an outermost belt layer in order to reduce local buckling of the cords- this is analogous to the benefits of improved buckling resistance set forth by the original disclosure. Thus, it is evident that the tire art has previously recognized the use of a high modulus material to form the outermost belt layer and one of ordinary skill in the art at the time of the invention would have readily appreciated the use of such a material in the tire construction of Farnsworth absent any conclusive showing of unexpected results."

Office Action dated August 24, 2004 at pages 8-10.

In these additional grounds of rejection, the Examiner continues to rely on *improper hindsight reconstruction*, using Appellants' disclosure, *not the prior art teachings*, as a blueprint for picking and choosing various features of tires from *different* applied references (*e.g.*, Farnsworth, Kohno and Gaudin). In doing so, the Examiner ignores the fact that the disclosures

of each applied reference, whether considered individually or as a whole, would actually *teach away* from the claimed invention.

For example, the Examiner acknowledges that Gaudin "describes a specific belt structure in which a high angled cord layer is disposed between an inner and outer low angle cord layer" and, therefore, does *not* describe the orientation of the cords in the first through third cord layers as required by the present invention. In fact, for the reasons noted above, Gaudin *teaches away* from the claimed structure.

The Examiner responds that Gaudin does not "suggest that the plurality of belt assemblies depicted in Figures 6-11 are only specific to the disclosed construction," and cites column 1, lines 35-40 of Gaudin. ("Furthermore in belt designs, it is desirable to stagger the ply endings in the edge regions of the belt by employing plies of different widths. This gives a progressive reduction in stiffness and minimized stress concentration at the belt edge."). Office Action dated 24, 2004 at page 9. The Examiner certainly is taking away from Gaudin more than what is actually taught or suggested by this disclosure.

While the quoted section of Gaudin may teach a general desirability to stagger the plies, it does not teach one skilled in the art the particular way of doing so. Specifically, it makes no reference as to the relative widths of the plies, nor does it make any reference to the angles of the cords within each ply. On the other hand, when one reads further into the disclosure of Gaudin, the reference provides a *specific* relationship between the orientations of the cords and the relative widths of the plies. Again, as explained above, the arrangement in Fig. 6 is tied to the structure of Fig. 2. *See* Gaudin at column 3, lines 1-14; column 3, lines 24-30; and column 3,

lines 31-35. Alternatively, and at a minimum, the first and third plies 1 and 3 in Gaudin have opposite inclination angles in the range of 5° to 40° and the second ply 2 has an inclination in the range of 40-85°. In any case, Gaudin would *teach away* from Appellant's invention. The Examiner cannot focus only on the disclosure at column 1, lines 35-40, while ignoring the teaching of Gaudin *as a whole*. Moreover, as already noted, the section quoted by the Examiner at column 1, lines 35-40, is *silent* as to the orientations of the cords and relative widths of the plies. Therefore, the reference clearly lacks the requisite specific teaching or suggestion to render obvious Appellant's invention.

Likewise, although the Examiner acknowledges that Farnsworth fails to depict all possible staggered assemblies, the Examiner continues to offer the *conclusory* position that "a fair reading of Farnsworth suggests that a plurality of belt constructions are within the scope of Farnsworth."

First, it is not sufficient that Farnsworth merely suggest "a plurality of belt constructions." The reference *fails* to disclose the combination of three rubberized cord layers having the particular cord orientations and widths recited in the claims.

The Examiner argues that, "[g]iven the three belt construction of Farnsworth, there are only 6 possible designs (varying axial widths), three of which are expressly depicted in the above noted figures." Office Action dated August 24, 2004 at page 9. *The Examiner is mistaken. In fact, there is an indefinite number of different possible designs, considering not only the belt width, but also the direction and inclination angle of the belt cord.* The Examiner then emphasizes "that Farnsworth fails to place a criticality on the specific staggering assembly but

rather stresses the importance of a high angled, metal cord layer radially outside a pair of low angle, metal cord layers- this is the same belt construction of the claimed invention." *Id.*. Again, without being able to point to any disclosure in the prior art that provides direction to one skilled in the art on the critical combination of relative ply widths and cord orientations, the Examiner merely concludes that Appellant's structure would have been obvious, despite the fact that *none* of the *disclosed* staggered configurations in Farnsworth correspond to Appellant's claimed invention.

Further evidence of the deficiencies in the grounds of rejection can be found in the conclusory positions set forth at pages 5-6 of the Office Action dated August 24, 2004, with respect to the limitation that the outer layer is 1.0-1.2 times that of the middle cord layer. The Examiner takes the position that Farnsworth depicts a "construction in which the high angled layer covers the middle cover and contains an axial width that is slightly staggered outward of the end of the middle cord layer." (Emphasis added.) In fact, "slightly" is a word of degree that has little meaning in this context. The drawings in Farnsworth are not disclosed as being to scale and the reference does not provide any hint that the outer cord layer should be 1.0-1.2 times that of the middle cord layer. The Examiner's position is mere supposition, lacking any basis in a prior art teaching or suggestion.

As explained in the present application, from a viewpoint of the durability at the belt end, the width of the outermost cord layer is 1.0-1.2 times the width of the middle cord layer. On the other hand, making the width of the innermost cord layer is wider than the width of the outermost cord layer (i.e., the width of the outermost cord layer is narrower than the width of the

innermost cord layer) is very effective to prevent the intrusion of cut failure generated in a place exceeding the widthwise end of the outermost cord layer. That is, the cut resistance is improved by making the width of the outermost cord layer narrower than the width of the innermost cord layer.

The Examiner also notes that "Farnsworth states that the tread width is on the order of 185 to 200 millimeters. Thus, a middle cord layer might have an axial width of approximately 150 millimeters- this allows for an outermost layer to have an axial width of up to 180 millimeters." (Emphasis added.) Again, the Examiner's mere belief as to how one skilled in the art "might" have sized the middle cord layer is not sufficient to render the claimed feature obvious.

Appellant notes the Examiner's position set forth in the Advisory Action dated December 28, 2004 regarding the Compartive examples in Tables 1 and 2 of Appellant's specification and the discussion therein beginning at page 54.

Appellants submit that the advantages of the claimed subject matter are amply set forth in the comparisons described in the Specificaiton beginning on page 54. The relevant examples of Appellant's invention are consistent with and fully commensurate with the scope of the claims.[2] Thus, by comparative test data, Appellant has delineated substantial improvements in performance of the tire in accordance with this subject matter covered by the claims on appeal.

[2] Of course, this would exclude the data for Examples 15 and 16 in Table 2, which correspond to a different embodiment.

The Examiner's reliance on any of the "Comparative" examples (both the tire configurations and the test results) as evidence of the claimed widths of the cord layers is improper, as these examples and test results are not prior art admissions.

Regarding the compression modulus, the Examiner has argued that Kohno suggests a minimum value for the compression modulus that is 100 times grater than that required by the claimed invention, such that one of ordinary skill in the art at the time of the invention would have readily appreciated the claimed range of "at least 200 kgf/cm^2." This is incorrect.

In the present invention, the compression modulus is carried out by the measuring method shown in FIG. 3. In this method, it is an essential feature that the rubber specimen does not expand in a direction perpendicular to the compression direction. That is, this method is a method imitating a state that rubber is compressed in the actual tire. Therefore, the measured value is naturally larger than that measured by the usual measuring method of compression modulus allowing the expansion of the rubber specimen in the direction perpendicular to the compression direction.

Finally, as to Kohno, this document discloses the modulus of elasticity for the circumferential layer only. Kohno is silent about the modulus of elasticity of the rubber coating for the slant layer (9). In the present invention, the recited modulus of elasticity (greater than 200 kgf/cm^2) is for the rubber coating of the outer belt layer having cords with a high degree of inclination.

b. Claims 24 and 25

Claim 24 is allowable over the applied art for the reasons set forth above in support of claim 1, with the exception that claim 24 does not recite that the outer cord layer is equal to or wider than the width of the middle cord layer. Therefore, Appellant does not rely on these features to distinguish claim 24 from the applied art.

c. Claim 5

Claim 5 is allowable by reason of its dependency from claim 1. In addition, claim 5 recites that the "rubber gauge between the cord at an end portion of the middle cord layer and the cord of the outermost cord layer adjacent thereto is not less than 0.15 time a rubber gauge between the cord at the end portion of the middle cord layer and the cord of the innermost cord layer adjacent thereto."

The Examiner rejection set forth at page 6 of the Office Action dated August 24, 2004, which is premised on a "fair reading of Farnsworth as a whole" is based on supposition and is so generalized as to fall well short of the rigorous standard required by the Federal Circuit in *In re Lee*. Therefore, claim 5 is allowable for this reason as well.

*2. **Claim 6 In View Of Farnsworth, Kohno, Gaudin, And Okamoto.***

Without agreeing to the Examiner's additional arguments with respect to claim 6, Appellant submits that this claim is allowable at least by reason of its dependency.

*3. **Claim 7 In View Of Farnsworth, Kohno, Gaudin, And Imamura.***

Without agreeing to the Examiner's additional arguments with respect to claim 7, Appellant submits that this claim is allowable at least by reason of its dependency.

VIII. CONCLUSION

It is respectfully requested that the Board of Appeals and Interferences reverse the rejection of claims 1, 3, 5-7, and 24-26 as being obvious in view of the applied art.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: March 24, 2005

CLAIMS APPENDIX

CLAIMS 1, 3, 5-7, and 24-26 ON APPEAL:

1. A pneumatic radial tire comprising:

a radial carcass having at least one rubberized cord ply extending between a pair of bead cores embedded in a pair of bead portions and reinforcing a pair of sidewall portions and a tread portion,

a belt reinforcing the tread portion at an outside of the carcass and consisting of three rubberized cord layers each containing steel cords therein, an innermost cord layer and a middle cord layer among these cord layers being a cross cord layer that cords of the layers are crossed with each other with respect to an equatorial plane of the tire, and

one or more circumferential grooves provided in at least each side region of the tread portion,

in which the cords of each of the innermost cord layer and the middle cord layer have an inclination angle of 10-25° with respect to the equatorial plane, and cords of an outermost cord layer have an inclination angle of 45-115° with respect to the equatorial plane as measured in the same direction as in the cords of the middle cord layer, and the outermost cord layer has a width extending toward an end of the tread portion over an outermost groove edge of an outermost circumferential groove in a widthwise direction of the tread portion and being narrower than a width of the innermost cord layer but corresponding to 1.0-1.2 times a width of the middle cord

layer, and a coating rubber for the cords of the outermost cord layer has a compression modulus of not less than 200 kgf/cm^2.

3. A pneumatic radial tire according to claim 1, wherein the outermost cord layer has a width covering both widthwise ends of the middle cord layer.

5. A pneumatic radial tire according to claim 3, wherein a rubber gauge between the cord at an end portion of the middle cord layer and the cord of the outermost cord layer adjacent thereto is not less than 0.15 time a rubber gauge between the cord at the end portion of the middle cord layer and the cord of the innermost cord layer adjacent thereto.

6. A pneumatic radial tire according to claim 1, wherein an end portion of at least one of the innermost cord layer and the middle cord layer is provided with an sheet-shaped end cover rubber enveloping such an end portion, and at least one surface of inner and outer surfaces of the cord layer end portion provided with the end cover rubber is a wavy surface forming a mountain part at a cord existing position and a valley part at a position between adjoining cords, and a difference of height between the mountain part and the valley part is within a range of 0.05-0.25 mm.

7. A pneumatic radial tire according to claim 1, wherein at least one of the innermost cord layer and the middle cord layer is provided with a rubber layer joined to a widthwise end

face of the cord layer over a full periphery of the cord layer, and the rubber layer has a width of 0.05-5.00 mm.

24. A pneumatic radial tire comprising:

a radial carcass having at least one rubberized cord ply extending between a pair of bead cores embedded in a pair of bead portions and reinforcing a pair of sidewall portions and a tread portion,

a belt reinforcing the tread portion at an outside of the carcass and consisting of three rubberized cord layers each containing steel cords therein, an innermost cord layer and a middle cord layer among these cord layers being a cross cord layer that cords of the layers are crossed with each other with respect to an equatorial plane of the tire, and

one or more circumferential grooves provided in at least each side region of the tread portion,

in which the cords of each of the innermost cord layer and the middle cord layer have an inclination angle of 10-25° with respect to the equatorial plane, and cords of an outermost cord layer have an inclination angle of not less than 45° and less than 90° with respect to the equatorial plane as measured in the same direction as in the cords of the middle cord layer, and the outermost cord layer has a width extending toward an end of the tread portion over an outermost groove edge of an outermost circumferential groove in a widthwise direction of the tread portion and being narrower than a width of the innermost cord layer, and a coating rubber

for the cords of the outermost cord layer has a compression modulus of not less than 200 kgf/cm^2.

25. The pneumatic radial tire according to claim 24, wherein the outermost cord layer has a width equal to or wider than a width of the middle cord layer.

26. The pneumatic radial tire according to claim 25, wherein the width of the outermost cord layer is 1.0 - 1.2 times the width of the middle cord layer.

EVIDENCE APPENDIX:

None

RELATED PROCEEDINGS APPENDIX

None